

Knapp (M. L.)
AN

INAUGURAL DISSERTATION

ON THE PROPERTIES OF THE

APOCYNUM CANNABINUM,

(INDIAN HEMP;)

SUBMITTED TO THE FACULTY

OF

JEFFERSON MEDICAL COLLEGE.

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EXPERIMENTAL DISSERTATION

ON THE PROPERTIES OF THE

ATOCYNUM CANTHARIDINUM

(THE CANTHARID)

AS APPLIED TO THE TREATMENT

OF THE GONORRHOEA

BY DR. J. H. H. H. H.

1811

TO
JOEL B. SUTHERLAND, (M. D.) ESQ.
WHO,
TO THE ACQUIREMENTS
OF A SCIENTIFIC PROFESSION,
UNITES THE TALENTS
OF A DISTINGUISHED STATESMAN,
THE FOLLOWING PAGES
ARE
RESPECTFULLY INSCRIBED.

JOHN A. BUTLER (M.D.)

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APOCYNUM CANNABINUM.

AN

INAUGURAL DISSERTATION, &c.

APOCYNUM is the name of a genus of plants. It is derived from the Greek, *απο* and *κυων* a dog, dog's-bane, or poison for dogs: also called Hippomanes, from *ιππος* a horse, and *μαινομαι* to be mad, because the plants were supposed to produce madness in horses.

We have but three species arranged under this genus. Michaux* has described only two, the *Androssæmifolium*, and the *Cannabinum*. Pursh† and Barton‡ describe a third, calling it *Hypericifolium*, and Nuttall§ says that there are other species, indigenous to southern climates, but he has not identified their characters. The first of these species has received the attention of Dr. Bigelow, of Boston, and will be found treated of in his valuable work, entitled "Medical Botany."|| The *Cannabinum* is the subject of this essay. The facilities which offered for investigating its properties, were, access to the laboratory of this institution, and an attendance on out-door patients of the Infirmary.

* *Flora Boreali Americani*, tom. 1. p. 122.

† Pursh's *Flora America*, V. 1. p. 179.

‡ Vide Barton's *Flora Philadelphiacæ*, Vol. i. p. 130.

§ "Of this genus there are several other species in South America, India, and the Cape of Good Hope, and one species *A. venetum*, said to be indigenous to the islands of the Adriatic."—*Genera of North American Plants*. Vol. i. p. 162.

|| Vide Vol. ii. p. 148.

DESCRIPTION OF THE PLATE.

1. Summit-branch, with a pair of follicles depending from the panicle.
2. A portion of the recent root and stem.
3. Specimen of the dried root.

BOTANICAL DESCRIPTION.

The plant, then, under consideration, is the second species of the genus *Apocynum*, class *Pentandria*, order *Digynia*; natural order *Contortæ* Linnæi.

The characteristics of the genus are the following:

Calyx, very small, five-cleft, persistent. *Corolla*, campanulate, half five-cleft, lobes revolute, furnished at the base with 5 dentoid glands alternating with the stamina. *Anthers*, connivent, saggitate, cohering to the stigma by the middle. *R. Brown*.

Style, obsolete; *Stigma*, thick and acute; *Follicles*, long and linear; *Seed*, comose. *Nuttall*.

The first and second species resemble each other so much, that a careless observer might easily mistake one for the other. I have therefore given the description of both, that the specific difference may be the more apparent.

1. *Apocynum Androssæmifolium*. *Leaves*, ovate, glabrous; *Cymes*, terminal and lateral; tube of the corolla longer than the calix. *Brown*.

Common Dog's-bane, Tutsan-leaved Dog's-Bane. From two to three feet high. Flowers, pale red and striped. On the borders of cultivated fields, frequent. Perennial. July. *Barton*.

2. *Apocynum Cannabinum*. *Stem*, upright; *Leaves*, oblong-oval, with hoary pubescence underneath; *Panicle*, pubescent; the limb of the corolla erect. *Willd. and Pursh*.

Indian Hemp. Resembles No. 1, easily distinguished, however, by the leaves and flowers, which are greenish white, or yellowish green, and smaller than those of No. 1. In similar places with the preceding. Perennial. June, July. *Barton*.

This description assigns to it its proper place, and identifies its characters sufficiently well for all botanical purposes, but in connexion with this general treatise, and from personal observation, I shall add some further remarks on its habitude.

It belongs to the natural family *Asclepiadææ* or *Apocynææ*, every part of the plant when wounded, emitting copiously a milky, agglutinating juice.

It grows common, I believe, in every section of the United

States, and will generally be found in the neighbourhood of water-courses, along ditches, borders of woods and cultivated fields; flourishing best where some agricultural operations have disturbed the soil. I have found it frequent in Jersey, on the borders of stubble fields, particularly in the vicinity of Cooper's creek.

It will mostly be found springing up singly, or from beside the old stalk of last year, with a stem erect, round, smooth, of a third of an inch in diameter, and pithy, and attains to the height of from two to four feet. It is of a yellowish green colour in the shade, but exposed to the sun, of a beautiful carmine red. The branches are also of a lively red colour, and together with the leaves are disposed in opposites.

The flowers appear in panicles situated on the summit, and the inner sexual parts being higher coloured than the corolla, the ~~clusters assume a~~ pink or purplish hue. The flowers are said to possess the singular property of catching flies, which is ascribed by Dr. Darwin* to irritability. Mr. Curtis,† however, says that it is owing to this mechanical reason, viz: that in consequence of the convergency of the anthers, and their adhesion to the top of the stigma, a narrow fissure exists, which becomes more contracted at the top. The proboscis of the insect being inserted into this cavity in search for the nectary, in withdrawing, gets caught, and the efforts of the insect to rescue itself only serve to fix it more securely. In this situation mosquitoes, gnats, and small flies are frequently found dead. The clusters of fruit hang in pairs of terete, linear-lanceolate follicles or pods, from three to six inches in length, and of the size of a crow quill; containing numerous imbricated seeds lying upon a small central rachis, or receptacle, and crowned with a long pappus, or down.

The root is horizontal, of the size of the stem, and extends in opposite directions, frequently to the distance of five or six feet, either way, with few or no collateral branches; often, however, sending up two or three stems in its course, and terminates

* Bot. Gard. part 2. p. 182.

† Bot. Mag. t. 280.

rather abruptly in a few spreading branches. It is made up of the ordinary parts of a perfect root, viz: epidermis, cortex, liber, lignum, and medulla, and sends off numerous fibrillæ for bringing in nourishment. It appears superabundant, or disproportioned in quantity to the rest of the plant, and may be reckoned a proper caudex or receptacle, for the elaboration, no doubt, of important medicinal juices. From twelve stalks of ordinary size, I obtained a pound of the root.

Its sensible properties are the following: It bleeds freely if wounded, and the concrete juice exhibits the properties of gum elastic. It has a strong odour, and a nauseous, sub-acrid, lasting bitter taste. The colour of the young roots is similar to that of the Irish potatoe, but the old roots are of a dark chesnut colour, approaching to black. It loses 45.8 parts in a hundred by drying, fractures transversely in its cortical portion, shrivels, and assumes a darker colour. When fully dried it ~~is not easily broken~~ breaks short, and is easily reduced to powder, in which state it very much resembles ipecacuanha.

ITS UTILITY AS APPLIED TO THE ARTS.

Into a strong decoction of the tops of the Apocynum Cannabinum were immersed separate rags of linen, cotton, and flannel, after having been dipped in a mordant of alum. The linen and muslin were dyed a fustic yellow colour, and so fixed, that repeated washings in soap and water did not in the least fade them, but on the contrary, deepened the colour. The flannel was little altered. The dye was rendered of a deep rhubarb colour, and on boiling deposited a copious yellow precipitate. With a mordant of coperas the dye became black, and the colouring matter was precipitated most abundantly into the texture of the flannel, which took a tolerable black, and was permanent. By boiling down this dye, an excellent, black, and durable ink was prepared. With alum and soda a cinnamon colour was produced. The nitro-muriate of tin (the proper mordant for scarlet,) produced a fawn coloured precipitate of all the extractive and colouring principles, and left a supernatant almost colourless fluid above. This precipitate was insoluble either in water or alcohol.

Hence we may infer that the plant contains tannin in considerable quantity, from the fact that black was produced on adding an iron base; the peculiar principle also, called extractive, from the copious precipitate that ensued on adding a salt of tin, those salts being the proper tests* of extractive; and that the colouring matter is adjective† and not substantive, from its residing in the extractive portions soluble in water, and requiring only a change of mordant to produce a different colour.

From the circumstance that the colour was rendered deeper by the alkaline principle of the soap, the idea occurred to me, whether the colouring matter might not be combined with the fecula of the plant, as in the Rocou of the American tree *Uruca*, the Archil of the *Lichen Parellus*, L. of Auvergne, and the Indigo of the *Indigofera tinctoria*, L. of St. Domingo, with some others; alkali or lime being the proper mordant to precipitate these colours, and hot water a solvent of fecula. Inasmuch, however, as these are substantive colouring drugs, the analogy cannot be maintained.

A fact of some importance is, therefore, deducible from the above experiments; that, indeed, on which the utility of this plant as a colouring material alone depends; viz. that the energy of the affinities of its colouring matter, both for the stuffs and bases applied to them, is such as to produce a permanent colour. The effect of the dye upon the different stuffs used as above, affords an example of the force of these natural affinities; wool, according to Bancroft,‡ having a stronger affinity for the metallic bases than any other known material.

Before I dismiss this part of my subject I beg leave to notice another, perhaps more useful property, this plant possesses, in relation to the purposes of the arts. I mean its hemp-like quality; and in illustration of which, I can advance nothing so appropriate as a quotation from the paper of E. C. Genet, Esq. "On the economical utility of the *Apocynum Cannabinum* and *Ascle-*

* Vide Thompson's Chemistry, volume iv. page 55.

† Vide Bancroft on Colours, volume i. page 341.

‡ Vide Bancroft on Colours, volume i. page 345.

pias Syriaca, natives of the state of New York, communicated to the society for the promotion of useful arts in 1810.”*

After mentioning its near relation to the asclepias and that all are indiscriminately called by the farmers, silk, cotton or milk-weed, he thus proceeds: “Leaving for the investigation of the chemists the medicinal qualities of the roots and juices of these plants, I shall consider only the economical benefits that might result from their cultivation.

“The apocynum or Indian hemp grows profusely on our low lands. Its blossoms like those of the silk-weed are purple, and the pods also contain a quantity of silk, though less than the silk-weed. But the coat of its stem is far superior in strength to the hemp.

“I caused to be water-rotted a considerable quantity in 1804. and obtained an excellent hemp as white as snow, remarkable for its strength, which proved to be double to that of common hemp.

“I have been informed that the Indians called Mowhicans, who formerly inhabited the land where my plantation is situated at Greenbush, on the east bank of the Hudson river, below Albany, made a great use of this plant, and not many years ago were still in the habit of coming from the distant place where they now dwell to collect it. Several of my oldest neighbours have assured me, that the ropes and yarn which they made from the fibres of that plant, were far superior for strength and durability, to those made of flax and hemp.

“That sort of apocynum being perennial could be cultivated and multiplied to the greatest advantage, and being more natural to low and overflowed lands, could render profitable certain pieces of ground which are now totally unproductive.

“The apocynum cannabinum in its natural state, is lower than the silk-weed, but cultivated, it would probably grow larger and liberally reward the attention paid to its improvement.”

MEDICINAL QUALITIES.

Case 1st. August 8th, 1825.—Martha P. an aged lady in Kensington. Dropsical affusions following intermittent fever. After

* See Transactions of the Society, &c. volume iii. page 153.

an alterative bleeding and some opening medicine, she took for three days an infusion of the galium aparine, which produced copious diaphoresis, and had some effect upon the urinary organs. I then ordered blisters to the ancles, and gave her pills of gr. iii. each of the extr. apocynum cannabinum, one to be taken three times a day; and from her wonted diet of ham, salt mackarel, &c. with the leguminous garden vegetables, restricted her to a farinacious diet and the light meats.

On the 13th, her urgent symptoms were meliorated. Pills had proved cathartic, also excited nausea but not vomiting. On the 15th, the anasarca was evidently diminished, but as she complained of load at the pit of the stomach, costiveness and sickness in the morning, I ordered her gr. xv. of the powdered root to be taken in the morning fasting, directing her if it vomited to drink freely of warm water, and if it purged to take plentifully of oat-meal gruel.

It operated as a prompt and efficient emetic, brought off much bilious matter from the stomach, and also proved cathartic. The anasarca of the feet and ancles, and the bloating of the abdomen which had excited much alarm in the patient's mind, were from this time found to be daily diminishing. The use of the pills as above mentioned was continued, and strict regard paid to diet.

On the 25th, from being unable to go out at all, she was so far restored as to be able to visit the infirmary, when she declared herself in better health than she had been for six months. As a preventive of costiveness she was ordered the following pills:

R. Pulv. Apocyn. Cannabin, ʒi.

Aloes Soc. - - ʒss.

Ol. Cinn. - - gtt. iij.

Sapo Cast. - - gr. xx.

Mucilage Gm. Acac. q. s. M. f. pill xxx.

S. One to be taken morning and evening.

Aug. 14th. Case 2d.—Charles A. aged twenty-five years, shoe maker, Arch-street. Intermittent fever. Commenced in April last, had been treated with emetics, cathartics, &c. followed by the bark, which had interrupted the paroxysms, but on discon-

tinuing the bark, had now returned. Complexion very sallow. I ordered him two powders, gr. xv. each, of the apocynum cannabinum, one to be taken that evening, and the other on the following day, an hour previous to the expected paroxysm. The effect of the first was that of a salutary emetic; no cathartic effect. The day following, agreeably to his directions, he took the other powder. In half an hour, felt the precursory sensations of coldness, yawning, lassitude, numbness, &c. The medicine soon took effect, vomited him freely, and so restored the balance of the circulation as to remove all sensations of the approaching chill. The symptoms at length returning, vomiting again subdued them, and so for several times successively; to use his own language, "it broke the fit." The stages, which before had been very distinct, were on this occasion but imperfectly developed; general perspiration and quiet sleep soon followed.

Two days after this, a change of weather occurred, in which the thermometer sunk from ninety to sixty-eight degrees, with cold northeast wind and rain, yet the paroxysms did not recur until the end of two weeks; when they again appeared and the liquor arsenicalis was had recourse to, which effected a cure. In the interim however, I gave him small doses of the apocynum, such as the stomach would bear, combined with opium and nitrate of potash in the form of Dover's powder. Whether this preparation had any effect in preventing the sooner return of the paroxysms I will not pretend to say: probably however, had the ipecacuanha been administered throughout, in its stead, the result would have been similar.

Convinced by these exhibitions of the plant, that it possessed at least virtues in common with other emetics, I next determined to see by a trial of its powers upon my own system, whether any thing peculiar attended its operation. Accordingly, Aug. 20th, I weighed out two powders of gr. xv. each, mixed one with a tea-cup-ful of warm water, and commenced taking it in the morning at a-quarter before twelve, fasting: in usual health, pulse seventy.

I began with two table-spoonfuls; in fifteen minutes felt a slight nausea, took two spoonfuls more, and in another fifteen

minutes took the remainder, which provoked efforts to vomit. After fifteen minutes more had elapsed I mixed and took the other powder, with a difficulty however unpleasant to reflect on. At one o'clock I vomited slightly, felt weak and sleepy, and went to bed. Drinking warm water would then doubtless have provoked full vomiting, but I chose to wait the effects of the medicine alone. After getting quiet in bed, I examined my pulse, and found it fifty strokes to the minute.

I had some headach, felt bewildered, drowsed, and fell asleep. I slept for more than an hour; was then awakened with extreme sickness followed by two spells of full vomiting, in the interim of which I examined my pulse and found it forty-five to the minute. About a quart of fluids together with the powder and some bilious matter were thrown off. I felt the stimulus of it passing onward into the intestines, and judged that it would also prove cathartic; which it did on the following morning in a gentle way, without any griping, and kept the bowels in a soluble condition for a day or two. While under its immediate effects I noticed a very considerable increased secretion of mucous and saliva from the mouth and fauces, which kept me constantly spitting, and also an augmentation in the secretion of urine. Upon the whole, relative to its operation, although it produced a very great diminution in the frequency of the pulse, yet it occasioned none of that death-like prostration I have always experienced on taking the tartar emetic, and although its bitter sub-acrid taste is very persistent in the fauces, yet I think it no more disagreeable to take than the ipecacuanha, while at the same time it operates as effectually as either. It will however, perhaps, be objected to on account of the tardiness of its operation: on this score it requires further trial, and in larger doses, before determining. Relative to myself, I can remark, however, that I have been obliged to take as many as sixty grains of ipecacuanha, with a less speedy, and less efficient operation than I experienced from this potion. I never to my recollection took an emetic that had so tranquillizing an effect, operated so fully, and at the same time produced so little debility. Its operation in my case would at least suggest an inquiry into its properties, whe-

ther it may not unite an anodyne principle with its emetic qualities?

Case 4th.—The result of this case gave me very considerable confidence in the remediate powers of the apocynum when applied to that form of bowel affection so common among children during the hot season, and known by the name of *summer complaint*. The little patient to whose case I allude is the son of Mr. J. W. living in Cypress Alley, and aged two and a-half years. He was subject to frequent attacks of croup, for two of which I treated him during the spring and early part of summer, and in both of which instances, but especially in the last, I was obliged to use prompt and copious depletion by the lancet, followed by the application of leeches and blisters to the thorax, inasmuch as the inflammation was extended to the bronchiæ and seemed to threaten a speedy effusion. Antimonials, calomel and the warm bath were likewise resorted to. I speak of this only in relation to that state of debility which ensued, and particularly that of the digestive functions, which seemed the connecting link in the chain of morbid affections between his inflammatory attack and that obstinate derangement of bowels that ensued, above alluded to.

It commenced during the convalescent state of the child, in the fore part of the month of July, and was not subdued until September. Considerable febrile action was generally present, as manifested by the irritated pulse, parched skin, and constant thirst. The nature and quantity of the discharges from the bowels were very variable, passing through all the shades from a dark green or muddy appearance, to that of a light clay colour; sometimes more copious than at others, but always more than natural. I had during the course of some three or four weeks prescribed most of the remedies usually had recourse to in like cases, such as calomel, oil, laudanum, rhubarb, magnesia, and also some particular anthelmintics, as the child had many symptoms of worms; with at most, however, but a mitigation of the complaint. The child was removed to the country, where it spent two or three weeks, and returned considerably improved. The bowel affection, however, soon became worse than

ever; the abdomen was prominent and tender, the thirst excessive, and the child though naturally fat had now become emaciated, and inclined to lie constantly upon his belly. It was indeed pitiful to behold the little sufferer lying in this condition and almost continually crying for cold water.

In this state of things, Aug. 26th, I discontinued the use of the powders of calomel and rhubarb the child was then taking, and substituted doses of grs. ii. each of the pulv. apocyn. cannabin. at intervals of three hours; and on the next morning, twenty-four hours from the commencement of them, I was happy in being informed that a favourable change had taken place, both in the appearance and frequency of the discharges.

The powders were regularly persisted in for a week, and the child's health went on rapidly improving. Neither vomiting nor purging was produced, but the morbid heat and thirst were allayed, the stools became natural, the skin soft and moist, and the functions of digestion and assimilation were gradually restored, and the child is at this time fat and healthy.

Case 5th.—In this case I tried the effects of the powder given in small doses, as a diaphoretic and expectorant.

It was a case of pneumonia, that occurred in Mrs. M. residing in Cypress Alley, Aug. 29th, and was treated on the usual antiphlogistic plan, substituting, after depletion, nauseating doses of the apocynum for ipecacuanha. It was exhibited in the humid way, gr. xv. to half a pint of warm water, and a table spoonful of this taken every hour. The nausea produced, after a few hours, was so oppressive that the patient omitted taking it; but it was afterwards taken in diminished doses, for two or three days. The effects were such as I should have expected from the like exhibition of the ipecacuanha. Arterial action was diminished, diaphoresis and expectoration promoted. As the patient was in a puerperal state and had nervous symptoms, I added, each evening to a dose of the apocynum, thirty drops of laudanum. The stitching pains and cramps were relieved, a gentle sweat occurred, and the patient rested well during the night. On the 5th day from the attack she convalesced, and recovered rapidly.

Case 6th.—Mr. D. J. aged twenty-one years, was a patient

who visited the infirmary, and who was under treatment for an ammaurotic affection.

Being under the use of general and strong evacuants, he was ordered, Sept. 7th, gr. xxx. of the apocyn. cannabin. It operated as an efficient, though not speedy emetic, and occasioned several evacuations downwards. On the 9th, he again took of it, but in larger quantity, viz. gr. xl. which vomited in thirty-five minutes; and in the course of an hour operated five or six times. During the day it purged about the same number of times. On the 11th, he took gr. lx. which produced full emesis and catharsis, as before; not differing from the operation of other emetico-cathartics, unless it were in producing a greater disposition to sleep.

Case 7th—Was one of general debility; the most prominent symptom being incontinence of urine. The patient, Sarah R. was a black servant residing in Bedford-street. I prescribed for her, September 8th, in conjunction with proper diet and regimen, the tincture of the apocynum cannabinum to be taken in doses of twenty drops three times a day. It produced nausea, and even efforts to vomit. The dose was reduced to fifteen drops, and continued for about a week, but as no good effect resulted from its use, it was superceded by other remedies. It was complained of as being extremely disagreeable to take.

Case 8th.—This case, I find in my notes, to be an old affair of chronic rheumatism; and the patient, (whose name I had omitted to mention,) a washer-woman living in Small-street. Several of the swellings upon the limbs and joints had run into a state of foul ulceration; she had been a patient in the Philadelphia Alms-house; was an habitual opium eater, and had applied probably to the Infirmary, more with a view to procure opium than with an expectation of receiving permanent relief. I find that from the 10th to the 30th of September I had prescribed the apocynum in the different forms of powder, decoction, tincture, ointment, and poultice; but all to no purpose in effecting a cure. The evacuations, together with the emolient applications, lessened the inflammation, swellings and sanious discharges, and the appearance of the ulcers, in some instances.

was much improved. Relative to the immediate effects of the different applications of the medicine, I see that it showed activity in all its forms. The powder, during its exhibition in a course of emetics, produced full vomiting in doses of gr. 10; and I observe that under the date of the 17th, the decoction produced hyper-emesis and catharsis, that lasted about twelve hours, and that according to the account of the patient, she must have vomited feculent matter in the form of scyballe, from the intestines. The decoction seemed most inclined to purge. Upon the whole, considering the extreme susceptibility of the patient to its action in any form, I was led to a careful exhibition of it, and only in small doses.

Case 9th.—This was a case of hernia-humoralis, the patient Mr. T. M. South Sixth-street, during the treatment of which I prescribed several emetics of the pulv. apocyn. cannabin. in doses of about thirty grains, which produced full vomiting followed by purging; and attended with this peculiarity, that the patient uniformly fell asleep, and was awakened by efforts to vomit. The emetics were taken in the morning.

Case 10th. September 14th.—Mr. D. J. S. æt. twenty-six years. Ammaurosis. This being pretty much a hopeless case, though under treatment by the moxa and electricity, together with evacuants; the pulv. apocyn. cannabin. was given both as an emetic and errhine. Administered as an emetic it required large doses to produce full vomiting, viz. sixty grains; which I imputed to the habit acquired from the previous exhibition of strong emetico-cathartics. As a sternutatory its operation was powerful, producing long continued sneezing, with copious secretions from the nose, eyes and mouth. The gentleman afterwards went to reside in New York, and has since sent for a quantity of it, to keep by him as a snuff.

Cases 11th and 12th.—These were two cases of scrofula that occurred in the children of Mr. G— residing in the Northern Liberties. I see from my notes, that from September 15th to October 6th, I prescribed the plant in tincture, powder and extract. It showed its active properties in all these forms, but evinced no tendency to produce a cure. A full dose of the powder occasioned sleep both before and after vomiting. The tincture in

doses of thirty drops produced nausea. The extract could not be retained on the stomach, but produced almost immediate vomiting.

Case 13th.—September 17th. A negro man in Small-street desired me to bleed him, for a severe pain in his side. I found also that he had a dysenteric state of the bowels. I bled him, and gave him a dose of the apocynum which produced vomiting, sweating and purging, and entirely relieved him.

Case 14th.—September 24th. Sarah W. æt. twenty-eight years, came to the Infirmary complaining of gastric symptoms in general. She was ordered a vomit, viz: gr. xxx. of the apocyn. to be taken that evening, and was requested to call next day for some pills. She did so. The medicine had operated well, and greatly relieved her.

Cases 15th and 16th—Were like the last mentioned only corroborative testimony of the activity of the powder, and its adaptation to bilious affections, as a safe, proper, and salutary emetico-cathartic.

Case 19th.—Mrs. B. æt. 25 years—South Sixth-street. When I first saw this woman, September 29th, she was in a paroxysm of hysteria, attacks of which she was very subject to. She was of plethoric habit, and a florid eruption was to be seen on the face, neck and arms. I took 16 oz. of blood, when she became sensible and answered to questions. I found she was troubled in a painful degree with hæmorrhoids, and had been, more or less, since her confinement, a few months previously. I ordered her a pedeluvium that evening, and put her upon a course of emetics of the apocynum, in doses of gr. xx. Local applications and ab-lutions were also advised. The emetics had a very happy effect; the bowels were kept soluble, and in little more than a week the tumours subsided.

Other cases might be added illustrating the utility of this plant and its applicability to the treatment of diseases where full vomiting and purging are demanded.

The root possesses all the medicinal properties of the plant and is active throughout, both in its cortical and ligneous portions. Water or proof spirits is its proper menstruum.

In powder it is an emetic, cathartic, expectorant, diuretic and

diaphoretic. In decoction it seems to lose some of its emetic properties, and to act more upon the bowels as a hydrogogue cathartic.

Communicated by Benjamin Welch, jr. M. D. of Norfolk, Ct.

————— “In relation to the subject of your thesis, all that I know of it is derived from Dr. Ives’ Lectures: my notes are as follows:

Apocynum. Dogs-bane, Indian hemp.—The appearance and sensible properties of its root resemble ipecac. except it is more bitter. There are several species. It is inferior to ipecac. requires larger doses, and is not so much of a diaphoretic. It is a milky plant, and when recent is acrid. Used as a lotion to cure itch and other eruptions; used as a sternutatory; perhaps it is one of the best that is used for this purpose. It is formed into a powder called cephalic snuff. In haste,

I am truly yours,

Dr. M. L. KNAPP.

BENJAMIN WELCH, Jr.”

Aug. 22d, 1825.

Since my Thesis was handed in, I have received from the highly respectable source of Dr. Parrish of this city, (as well as from the patient himself,) the following particulars of a perfect cure of dropsy that was effected by this plant. I have obtained leave to annex them in this place.

The patient, Mr. J. Morgan, a very respectable gentleman of about fifty years of age, and now residing in Lodge-street, was treated by Dr. Parrish during the last summer for a confirmed dropsy of the belly, that had been accumulating for upwards of a year. The Doctor informs me that a rigid course of treatment was for a long time persevered in, but that the whole routine of remedies, cal. squill, crem. tart. jalap, &c. entirely failed. The necessity of tapping was more than once urged, but the patient stedfastly refused.

It now occurred to the Doctor’s mind, that some years since, while travelling through the lower part of New Jersey, a young man came under his notice, in whose case an astonishing cure of dropsy was said to have been effected by a nostrum prepared from a plant that grew common in that section, (and which was the Indian hemp,) by an old herb doctor, a native of India, and who now resided in town. The patient was informed of the particulars. The old East Indian was found, the plant obtained from Jersey, and a decoction prepared of about the colour of the white wines, and a wine-glassful taken three times a day.

Its effect was that of a hydrogogue cathartic producing (as the patient

himself informed me) as many as forty copious watery stools in twenty-four hours! It also occasioned great sickness and vomiting. The system was soon relieved of all dropsical effusion, and in two months time, without the aid of any other remedy whatever, the patient's health and strength completely re-established.

This gentleman has since recommended it to some of his acquaintances labouring under dropsy, and in general with the happiest effects. I was referred to the brother of one of the patients, Mr. Dallat a respectable tallow Chandler in Market-street, whose sister had been much relieved of a dropsy of ten years standing by the use of a decoction of the root, as in the above case, and continued only for one week. The friends believed that a complete cure might have been accomplished in her case, had she received a sufficient supply of the plant to have continued it longer. The enormous swellings of the lower extremities entirely subsided, and the patient's body was reduced nearly to its natural size. The lady resides in the country, towards Lancaster, and is about forty years of age. She has since been supplied with the drug, but her constitution being much enfeebled, she has not had courage again to undergo the severity of its operation.

CHYMICAL ANALYSIS.

Process 1st.—August 9th. A watery decoction of the roots of the plant being made, it was subjected to the following re-agents or tests. 1. A solution of gelatine flung down a brown precipitate. 2. The salts of iron caused the liquor to assume a black colour, and threw down a copious black precipitate. 3. The acetate of lead threw down a brownish precipitate. 4. The salts of tin immediately occasioned a very copious fawn coloured precipitate. These show clearly that tannin and extractive are prominent principles in the plant.

Process 2d.—Aug. 10th. To two ounces and a-half of the recent root, bruised, were added oz. viii. of alcohol. This was steeped for two weeks, when it exhibited the following appearances and phenomena. Colour that of the white wines; taste disagreeably bitter. A few drops of water let fall into a portion of it occasioned a turbid appearance; poured in, in larger quantity, the mixture assumed an opaline appearance, and on standing let fall a white flocculent precipitate. A given portion of it being evaporated to dryness, a dark brown-coloured extract was obtained, exhibiting the properties of resin united with some impurities; and by which it was ascertained that alcohol, at the

temperature of the atmosphere, takes up 1.041 per cent. of its weight, or about gr. v. to the ounce. Of this .666 parts per cent. were found soluble in water, leaving .375 per cent. of resin.

Process 3d.—Aug. 11th. Two ounces of the recent root sliced, were put in maceration in two ounces of sulphuric ether. On the 19th the following phenomena were shown with it. Poured into alcohol it rendered it permanently turbid. Suffered to evaporate over water, a cream coloured substance was left, that exhibited all the sensible properties of caoutchouc. A small dark coloured rod, repeatedly dipped in the solution, and the ether suffered to evaporate each time, received a sensible coating; showing that bougies, or catheters, might perhaps be constructed of it.

Process 4th.—Aug. 16th. An ounce of the pulverized root was put in half a pint of water, and digested for a week in a cool place. The liquid then had assumed somewhat of a yellowish colour, and gave a very persistent bitter taste. It was filtered and submitted to the action of the following re-agents.

1. The vegetable alkalies and lime water occasioned no precipitate.
2. Nitrate of silver rendered the solution of a purplish colour, and threw down a very soft flaky brown precipitate.
3. Tartar emetic produced no change.
4. Corrosive sublimate had no effect.
5. Muriate of tin occasioned no precipitate.
6. Acetate of lead threw down a copious yellowish-white precipitate.
7. The sulphates of zinc and copper produced no alteration.

From these experiments I warrantably inferred that I had obtained another of the proximate principles of the plant, viz. the bitter principle; inasmuch as Thompson* declares that the "nitrate of silver and acetate of lead are the only two bodies which throw it down."

Process 5th.—Oct. 25th. Two ounces and a-half of the pulverized root were digested for some hours in oz. iv. of sulphuric ether, in a retort, with a gentle heat. The heat was then in-

* Vide Thompson's Chem. vol. iv. page 48.

creased, the ether driven off, and oz. iv. of alcohol added. The process was conducted for some hours again over a gentle heat, and then the alcohol made to boil, when it was poured through a searce, and the powder treated with fresh portions of alcohol as long as it imparted to it any colour. This, on cooling, let fall a copious white, or yellowish-white precipitate, which had a waxy appearance and feel. When heated in an iron spoon, it melts, froths, swells up, smokes, and then takes fire and burns with a vivid white flame, and leaves a light flaky charcoal in very minute quantity behind. The alcohol was found to redden litmus paper, and to yield a copious precipitate on adding a weak solution of gelatine. A portion so treated, was evaporated to dryness by a gentle heat, which left a semi-transparent yellowish substance behind, which was at first hard and brittle, but which deliquesced in the atmosphere. This was referred to Professor Barton for his opinion upon it; to whom there appeared so strong a similarity between it and the cinchonin, in all its sensible properties, that he judged it would be difficult to discriminate between them. This was re-dissolved in water, filtered, and again evaporated to dryness. The residuum consisted of light scales of a brownish colour, possessing a degree of metallic lustre.

These scales melt readily upon the tongue, and communicate a taste, that is at first of a mawkish sweetness, but soon betray in an intense degree, the peculiar taste of the plant. I had not an opportunity of ascertaining the effects of this product upon the system, the servant having destroyed it by cleansing the china-cup that contained it.

Process 6th.—A quantity of the pulverized root was digested first in ether, then in alcohol, and treated with successive portions over a sand bath until the liquor came off colourless. The whole, when cold, was filtered, evaporated to dryness over a water bath, re-dissolved in water, again filtered, and digested for twenty-four hours upon the carbonate of magnesia. Alcohol was then freely added, and the magnesia thoroughly washed, and being separated by the filter, the evaporation was again conducted to dryness, over a water bath at the boiling temperature.

The result was a semi-transparent yellowish-brown, or sugar

coloured mass; hard, brittle, and exhibiting a resinous or micaceous fracture.

It is slightly deliquescent, of a mawkish-sweetish taste, becoming sub-acrid, bitter, and very persistent, and occasioning a swollen sensation of the lips and tongue.

Given in doses of from three to six grains it excites full vomiting, followed by sleep, prostration, purging, and temporary ptyalism.

It bears some analogy in its characters to emetin, but more I think to cytisine,* of the *cytissus laburnum*; and being the peculiar principle of the apocynum in which its active properties reside, in a state approaching to purity,† is justly entitled, I think, to the appellation of *Apocynin*.

From this analysis of the plant, rude and unfinished as it is, it appears that the following are proximate principles of it:

1. Extractive colouring matter.
2. Tannin.
3. Gallic acid.
4. Resin.
5. Wax.
6. Caoutchouc.
7. Bitter principle.
8. Fecula.
9. Woody fibre.
10. Apocynin, or the peculiar principle in which its active medicinal properties reside.

To conclude, I must claim the indulgence of those who have gone before me, inasmuch as no definite rules have yet been laid down for the chymical analysis of vegetables; but in every particular case, the analyst must, as it were, invent a method for himself, follow his own judgment, and be guided by his own experience, progressing with the slow pace of the self-taught pupil.

It is apparent, that the science of vegetable chemistry invites

* Vide Magendie's Formulary, p. 96.

† This preparation contains, I think, besides apocynin, bitter principle, and suggests the use of acetate of lead in its further preparation.

to its cultivation, and greatly is it to be hoped that the spirit of research and discovery, so remarkable in our countrymen, will, on this subject, become more operative. The materia medica so far from being redundant, as some have supposed, is doubtless destined to be much farther enriched with the concentrated or peculiar principles of vegetables, that will in their application be found preferable to many of our mineral products, those banes, too often, of the health and constitution, which, like the Vampyres of Java, eventually destroy the blood, while they lull in present security the unsuspecting victim.

Nearly connected with the march of these improvements is a cultivation of the science of botany; which, so far as my observation extends, is at present a neglected subject, a system of botany scarcely finding its way into the libraries of the physicians of our country; and though students may resort to the schools for instruction, still it there constitutes no part of the usual routine of their studies. Would it not be better for science and the profession, were our medical schools to be endowed with a professorship of botany, and a thorough knowledge of its principles made necessary to graduation? Should this plan be adopted it is but reasonable to suppose that a more general spirit of research would pervade our country, and ere long should we be able to reverse the position of the poet, and say,

*Not "many a flower is born to blush unseen
And waste its sweetness on the desert air."*

FINIS.